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The memoir concludes with two appendices and an extensive bibliography. Appendix I is entitled "On Ground Air and its Relations to Atmospheric Carbonic Anhydride," in which some very interesting figures are given and important conclusions drawn. Appendix II is on "A Comparison of the Results of Determinations of Carbonic Anhydride by Pettenkofer's Original Process, and the Method proposed by Professor Letts and Mr. Blake, and on the Errors incidental to Pettenkofer's Process." By William Caldwell.

The bibliography contains 305 entries, proportioned as follows: German 128, French 98, and English 79.

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Om de Senglaciale og Postglaciale Nivåforandringer I Kristianiafeltet (*Molluskfaunan*). By W. C. BRÖGGER. Separaftryk af Norges geologiske undersögelse No. 31. Kristiania, 1901.

THIS volume concerns itself primarily with the study of the faunas of Pleistocene time in the vicinity of Christiania, and with the changes of level which the character and distribution of these faunas indicate.

The conclusion is reached that the deep sea bottom adjacent was something like 2600^{m} higher than now when the great ice sheet was on, this inference being based on the existence of shallow water fossils at great depths in the "Norwegian sea."

At the end of the last interglacial epoch the land is thought to have been some 100^{m} higher than now, and that this epoch of elevation continued into the time of the last ice covering. As the ice of the last epoch began to melt, the land began to sink, the subsidence continuing for some time after the retreat of the ice began. At the time of the formation of the outermost moraines, the land was 100^{m} to 125^{m} lower than now. This was the time of the deposition of the older and younger yoldia clays and of the older arca clay. While the ice retreated to the second series of moraines, subsidence continued until the land was 150^{m} to 160^{m} below its present level, when the outermost moraines of the second series were formed, and 180^{m} to 185^{m} below its present level during the formation of the innermost moraines of the same series. There was further sinking as the ice receded to its third halting place, and at that time the land stood about 200^{m} below

its present level at Christiania. Just before the moraines of the third set were made, the younger arca clay was deposited. Still later the land sank somewhat more, while the ice receded to what is called its "epiglacial station;" that is, to its fifth halting place. By this time the land had sunk to about 240^{m} below its present level. Subsidence then gave place to uplift.

Both the subsidence and the re-elevation are thought to have affected the peripheral parts of the land first, and to have extended progressively toward the center.

The author holds the view that the ice disappeared first from the highlands of Norway, and that the higher parts of central Norway were nunataks at the time of the formation of the first moraines, and that the ice was so thin as to fill only the valleys in the peripheral parts of south Norway at the time of the second series of moraines, while during the time of maximum subsidence the ice filling the Mjosen valley is thought to have found its upper limit about 480^{m} above sea level.

The molluscan faunas of the clay beds of glacial age indicate that the climate was progressively ameliorating from −8 C., or −9 C., at the time of the formation of the outermost moraines, to +2 C. at the time of maximum subsidence. The name "Christiania Period" is proposed for the time of sinking.

The shell banks and clay beds deposited during the rise of the land indicate by their character and distribution that the rise commenced in some places sooner than in others, and that it proceeded at unequal rates in different places.

The volume also includes a study of the postglacial and recent faunas. The division between the postglacial and recent is placed at the time when the elevation after the subsidence had attained 40 per cent. to 66 per cent. of all that has taken place in the Christiania region. The distribution and the character of the faunas of postglacial and recent times show that the rate of rise has been inconstant and that progressive amelioration of the climate has accompanied the elevation. The climate at the present time is, however, cooler by about 2° C. than that which obtained while the youngest of the so-called postglacial faunas lived.

An English summary at the end of the volume makes the author's conclusions available to those who do not read the Norwegian language.

R. D. S.